

CLAIMS

What is claimed is:

1 1. A master cylinder for a hydraulically actuated clutch or brake
2 system in a motor vehicle, comprising:

3 a housing;

4 a piston axially moveably arranged in said housing; and

5 a piston rod having a ball-shaped head and connected to said piston,

6 wherein said piston comprises a piston shaft sleeve and first and second
7 support elements forming a spherical socket supporting said ball-shaped head so that
8 the spherical socket and said ball-shaped head form a ball joint, said first and second
9 support elements being supported by said piston shaft sleeve against forces introduced
10 by said piston rod such that said piston and said piston rod are connected to each other
11 essentially without play and are swivelable relative to each other at the ball joint, said
12 first support element comprising a hemispherical shell enclosing one half of said ball-
13 shaped head which faces away from said piston rod, said second support element
14 comprising a spherical-segment-shaped ring defining an opening through which said
15 piston rod passes, and supporting the other half of said ball-shaped head.

1 2. The master cylinder of claim 1, wherein the piston shaft sleeve
2 comprises a closed bottom, said first support element being supported axially against
3 said closed bottom of said piston shaft sleeve.

1 3. The master cylinder of claim 1, wherein said second support element
2 includes a support sleeve and said spherical-segment-shaped ring is formed on said
3 support sleeve.

1 4. The master cylinder of claim 1, wherein said second support element is
2 secured axially at one end of the piston shaft sleeve by a latching connection.

1 5. The master cylinder of claim 1, wherein one end of said piston shaft
2 sleeve includes a collar and said second support element is secured axially at the one
3 end of the piston shaft sleeve by said collar on said piston shaft sleeve.

1 6. The master cylinder of claim 1, wherein said second support element
2 has a contact surface contactable by said piston rod for limiting the swiveling movement
3 of said piston rod at said ball joint.

1 7. The master cylinder of claim 1, wherein said second support element
2 has at least one axial slot proximate said spherical-segment-shaped ring, said master
3 cylinder further comprising a take-up ring at least partially surrounding said spherical-
4 segment-shaped ring and preventing radial expansion of said spherical-segment-
5 shaped ring.

1 8. Cylinder according to Claim 7, wherein said first and second support
2 elements comprise confrontingly opposed ends, wherein said take-up ring is a common
3 take-up ring surrounding both of said confrontingly opposed ends.

1 9. The master cylinder of claim 8, further comprising a latching connection
2 between said take-up ring and each of said first and second support elements for
3 retaining said first and second support element and said piston rod as a structural unit.

1 10. The master cylinder of claim 7, further comprising a latching
2 connection between said take-up ring and said second support element.

1 11. The master cylinder of claim 1, wherein said first support element
2 includes a ring-shaped web proximate said hemispherical shell which receives an area
3 of said second support element proximate the spherical-segment-shaped ring, said ring-
4 shaped web preventing radial expansion of said area of said second support element.

1 12. The master cylinder of claim 11, wherein said ring shaped web holds
2 the area of said second support element by a latching connection.

1 13. The master cylinder of claim 1, wherein said first and second support
2 elements form a support frame for said piston shaft sleeve.

1 14. The master cylinder of claim 13, wherein said piston shaft sleeve is a
2 thin-walled part that is deep-drawn from a metal material.

1 15. The master cylinder of claim 1, wherein said piston shaft sleeve is a
2 thin-walled part that is deep-drawn from a metal material.